

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 2, 3, and 5-23 are pending. Claims 1 and 4 were canceled previously. Claims 5-21 are withdrawn. No claims are amended or newly added. No new matter is added.

In the outstanding Office Action, Claims 2, 3, 22, and 23 were rejected under 35 U.S.C. § 103(a) as obvious over Kobayashi et al. (U.S. Patent No. 6,844,094, herein “Kobayashi”).

Regarding the rejection of Claim 2 as obvious over Kobayashi, that rejection is respectfully traversed by the present response.

Independent Claim 2 recites:

A fuel cell system comprising:  
a fuel cell having an anode, a cathode and an electrolyte film put therebetween;  
a fuel supply unit supplying fuel to the anode;  
an exhaust flow path communicating with both the anode and the cathode; and  
a gas supply unit having a pump, the pump being linked with the exhaust flow path to apply negative pressure to the cathode so as to introduce gas containing oxidant to the cathode, wherein the pump applies negative pressure further to the anode via the exhaust flow path so as to supply fuel to the anode.

Accordingly, an exhaust flow path communicates with both the anode and the cathode. A gas supply unit has a pump. The pump is linked with the exhaust flow path to apply negative pressure to the cathode so as to introduce gas containing oxygen to the cathode. The pump applies negative pressure to the cathode via the exhaust flow path so as to supply fuel to the anode.

The outstanding Office Action acknowledges that Kobayashi fails to teach an exhaust flow path communicating with both the anode and cathode and that the pump supplies positive pressure to the fuel supply unit.<sup>1</sup>

The outstanding Office Action, in the “Response to Arguments” section, states that the previous arguments are moot as a new rejection of Claim 2 under 35 U.S.C. § 103(a) is issued. However, the previous arguments submitted by the Applicants include arguments regarding the non-obviousness of Claims 2, 3, 22 and 23 as amended into the current form. For example, see the discussion from the second paragraph of page 9 through line 3 of page 11 of the amendment filed on October 18, 2007. The Applicants respectfully request reconsideration of these arguments. Further, Applicants respectfully request a response to these arguments if any new Official Action is issued. The following summarizes the previously submitted arguments.

To produce the invention recited in independent Claim 2 using Kobayashi as a primary reference, substantial modifications would be required. The required modifications would include, for example, omission of the hydrogen-circulation pump (33) upstream of the anode and provision of a single pump linked with the exhaust flow path to give negative pressure to both the cathode and the anode. The necessity of these modifications is apparent because, as stated in the middle of page 3 of the outstanding Office Action, the hydrogen-circulation pump (33) provides positive pressure to the fuel cell (1), which is inconsistent with the negative pressure given by the pump recited in independent Claim 2.

In the invention recited in independent Claim 2, although a pump such as the hydrogen-circulation pump (33) is omitted, the fuel supply function is retained because the negative pressure given to the anode provides fuel supply. In other words, the fuel cell system recited in independent Claim 2 retains the function of an element while omitting the

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<sup>1</sup> Outstanding Office Action, page 3.

element. Omission of an element and retention of its function is an indicia of non-obviousness. MPEP § 2144.04(II)(B) states:

***B. Omission of an Element with Retention of the Element's Function Is an Indicia of Unobviousness***

Note that the omission of an element and retention of its function is an indicia of unobviousness. *In re Edge*, 359 F.2d 896, 149 USPQ 556 (CCPA 1966) (Claims at issue were directed to a printed sheet having a thin layer of erasable metal bonded directly to the sheet wherein said thin layer obscured the original print until removal by erasure. The prior art disclosed a similar printed sheet which further comprised an intermediate transparent and erasure-proof protecting layer which prevented erasure of the printing when the top layer was erased. The claims were found unobvious over the prior art because the although the transparent layer of the prior art was eliminated, the function of the transparent layer was retained since appellant's metal layer could be erased without erasing the printed indicia).<sup>2</sup>

Thus, **omission of an element with retention of the element's function as set forth in the asserted modification of Kobayashi provided in the outstanding Office Action, is an indicia of non-obviousness.** Accordingly, Applicants respectfully submit that it would not have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to modify Kobayashi in order to omit the pump (33).

In addition to the above arguments submitted in the prior amendment, Applicants further respectfully submit that, without using the present application as a roadmap, a person of ordinary skill in the art would have had no reason to make the modifications to Kobayashi asserted in the outstanding Office Action.

If the aforementioned modifications to Kobayashi were carried out, the negative pressure created by the claimed pump would act equally on both the cathode and the anode. In the meantime, a large amount of water would exist in the cathode as described in lines 39-54 in column 1 of Kobayashi. The water would produce great resistance to flow in the

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<sup>2</sup> Manual of Patent Examining Procedure, Eighth Edition, Rev. 3, August 2005.

cathode, while the anode is free from such resistance. As the cathode would have greater resistance than that of the anode under pressure, the negative pressure would promote a flow in the anode greater and a flow in the cathode. This situation would render discharge of water in the cathode unsatisfactory, defeating the intended purpose of Kobayashi's device.

Kobayashi states:

In light of the situations of the prior art, an object of the present invention is, therefore, to provide a gas-supplying apparatus for a fuel cell, whose electric power consumption is small, **and which can easily discharge the produced water**, whereby the fuel cell can be operated under adequate conditions.<sup>3</sup>

Accordingly, Kobayashi intends to discharge produced water from the cathode, and this intended use would be impeded or inhibited by the modification asserted in the outstanding Office Action.

MPEP § 2143.01V states:

**V. THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE**

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

Thus, as the modification asserted in the outstanding Office Action would render Kobayashi unsuitable for its intended (and stated) use, the modification is not would not have been obvious to a person of ordinary skill in the art at the time the claimed invention was made.

Moreover, Applicants respectfully request reconsideration of unexpected beneficial results provided by the invention recited in independent Claim 2. As discussed on pages 6 and 7 of the original specification, one benefit of the invention recited in Claim 2 is the prevention or reduction of leakage of both the fuel and water continuously produced in the cathode while simultaneously bringing about re-use of the fuel and the water and a further

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<sup>3</sup> Kobayashi, col. 1, lines 56-52 (emphasis added).

steady supply of the fuel. The system recited in Claim 2 additionally provides a simple and compact structure. These beneficial results are not suggested and would not be expected from the teachings of Kobayashi.

Evidence of unexpected results is one of the secondary considerations to be considered when determining whether a claimed invention is obvious. The *Graham* factors, including secondary considerations, when present, are the controlling inquiries in any obviousness analysis. The *Graham* factors were reaffirmed and relied upon by the Supreme Court in its consideration and determination of obviousness in the fact situation presented in KSR International v. Teleflex, Inc., 550 U.S. at \_\_\_, 82 USPQ2d 1385 at 1391 (2007).

Accordingly, in light of the discussion above, Applicants respectfully submit that the rejection of Claim 2 as obvious over Kobayashi is overcome.

Independent Claim 22 recites substantially similar features to those discussed above regarding independent Claim 2 and patentably distinguishes over Kobayashi for at least the same reasons as independent Claim 2 does. Each of Claims 3 and 23 depends from one of Claims 2 and 22 and patentably distinguishes over Kobayashi for at least the same reasons as the respective independent claim.

Consequently, in light of the above, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters  
Attorney of Record  
Registration No. 28,870

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Lee L. Stepina  
Registration No. 56,837